


Preface

This *Transportation Statistics Annual Report 1998* is the fifth annual report prepared by the Bureau of Transportation Statistics (BTS), as required by law [49 U.S.C. 111 (j)]. As in prior years, the report brings together under one cover information about how the transportation system is used, how well it works, its economic contributions and costs, and its unintended consequences for safety, energy import dependency, and the environment. This year's report also contains a detailed analysis of long-distance passenger travel and freight activity, drawing on the American Travel Survey and the Commodity Flow Survey conducted by BTS in cooperation with the U.S. Census Bureau.

This report was initially developed under Dr. T.R. Lakshmanan, the Bureau's first Director, who returned to teaching in January 1998, and was completed under the administration of Deputy Director Robert A. Knisely.

Summary



This fifth *Transportation Statistics Annual Report* assesses the nation's transportation system and the state of transportation statistics. The report, mandated by Congress, is prepared by the Bureau of Transportation Statistics (BTS).

PART I: THE STATE OF THE TRANSPORTATION SYSTEM

The first four chapters of Part I examine the state of the transportation system, its economic impacts, and unintended consequences for safety, energy, and the environment. The fifth chapter summarizes the quality of information underlying this assessment.

The Transportation System

In 1996, the interlocking elements of the U.S. transportation system—a combined public-private enterprise—supported 4.4 trillion miles of passenger travel and about 3.7 trillion ton-miles of goods movement. The system included, among other elements, over 5.5 million miles of public roads, railroads, waterways, and oil and gas pipelines; over 18,000 public and private airports; and 230 million motor vehicles, railcars, aircraft, ships, and recreational boats. Table 1-1 in chapter 1 details key elements of each mode.

Use of the transportation system grew very quickly between 1980 and 1996: passenger-miles traveled increased more than 50 percent and ton-miles more than 25 percent. In some modes, demand grew faster than some physical components. For example, annually, highway lane-miles grew 0.2 percent, while vehicles-miles traveled increased 3.1 percent. In addition, urban highway congestion increased.

Use of Class I freight railroads increased, while track-miles owned by Class I railroads declined. Between 1980 and 1996, revenue ton-miles increased by 48 percent, from 0.92 trillion to 1.36 trillion ton-miles. During the same period, miles of track owned decreased by one-third, from 271,000 to 177,000 miles.

Air transportation has grown rapidly. The number of domestic enplanements in 1996 (about 538 million) and planes in certificated service (about 6,000) were about twice their

1980 level. Enplanements on international flights of U.S. carriers also doubled over the period, reaching 55 million in 1996. Over the last decade, the condition of runways at the country's most important airports improved. Performance based on on-time arrivals, involuntary boarding denials, and mishandled baggage has deteriorated in recent years. For example, in 1996, 75 percent of flights arrived on time, compared with 83 percent in 1991.

Not all modes experienced major increases in use, however. Urban transit capacity measured by vehicle-miles operated increased 13 percent between 1985 and 1995 to nearly 2.4 billion, but the number of trips declined from 8.3 billion to 7.3 billion during this period. Passenger-miles traveled remained the same at about 38 billion over the same period, suggesting that trip lengths are increasing.

International gateways—points of departure and arrival in the United States—have taken on added importance in recent years, reflecting growth in international travel and trade. Canada and Mexico account for the majority of both short-term (day) and long-term (at least one night) passenger travel to and from the United States. Because of this, surface modes convey most international passenger traffic through gateways in such areas as Detroit, Buffalo, El Paso, and San Ysidro in California. The airports that serve as the largest international passenger gateways are in New York, Miami, Los Angeles, Chicago, and San Francisco. On the freight side, the top five international gateways (in terms of value) are Kennedy International Airport, the Port of Long Beach (water), the Port of Detroit (land), the Port of Los Angeles (water), and San Francisco International Airport.

As the volume, value, and importance of international merchandise trade to the U.S. economy continue to expand, so does the impact on the nation's transportation systems. In particu-

New in This Edition

The fifth edition of the *Transportation Statistics Annual Report* has several new sections and special features:

- Chapter 1 has sections on the importance of international gateways and domestic water transportation for passengers and freight transportation.
- Chapter 2 inaugurates the Transportation Satellite Accounts, a new perspective on the contribution of in-house transportation services to the value generated by the U.S. economy.
- Chapter 3 has a section on transportation safety and the elderly.
- Chapter 4 features a discussion on deicing and anti-icing at airports.
- Chapter 5 reviews transportation data needs in the post-ISTEA era.
- Chapters 6 and 7 continue the tradition of a theme section. This year, the focus is on long-distance passenger travel and long-haul freight. Two recent BTS-sponsored surveys, the 1995 American Travel Survey and the 1993 Commodity Flow Survey, provide much of the data for the analysis.

lar, many physical components of that system act as critical infrastructure gateways for trade by maritime, surface, and air modes. The map below shows the leading foreign trade gateways, based on value, for the United States. Exports and imports in excess of \$30 billion passed through each of these land, air, or maritime ports in 1996.

Many people think of import and export of goods in maritime trade as the primary function of commercial water transportation. Yet, nearly as much tonnage moves on the domestic water transportation system (1.1 billion tons in 1996). The domestic system includes the inland and intracoastal waterways, the Great Lakes-St. Lawrence Seaway system, and domestic offshore and coastwise shipping.

Among events in 1997 that had notable transportation impacts, four are discussed in chapter

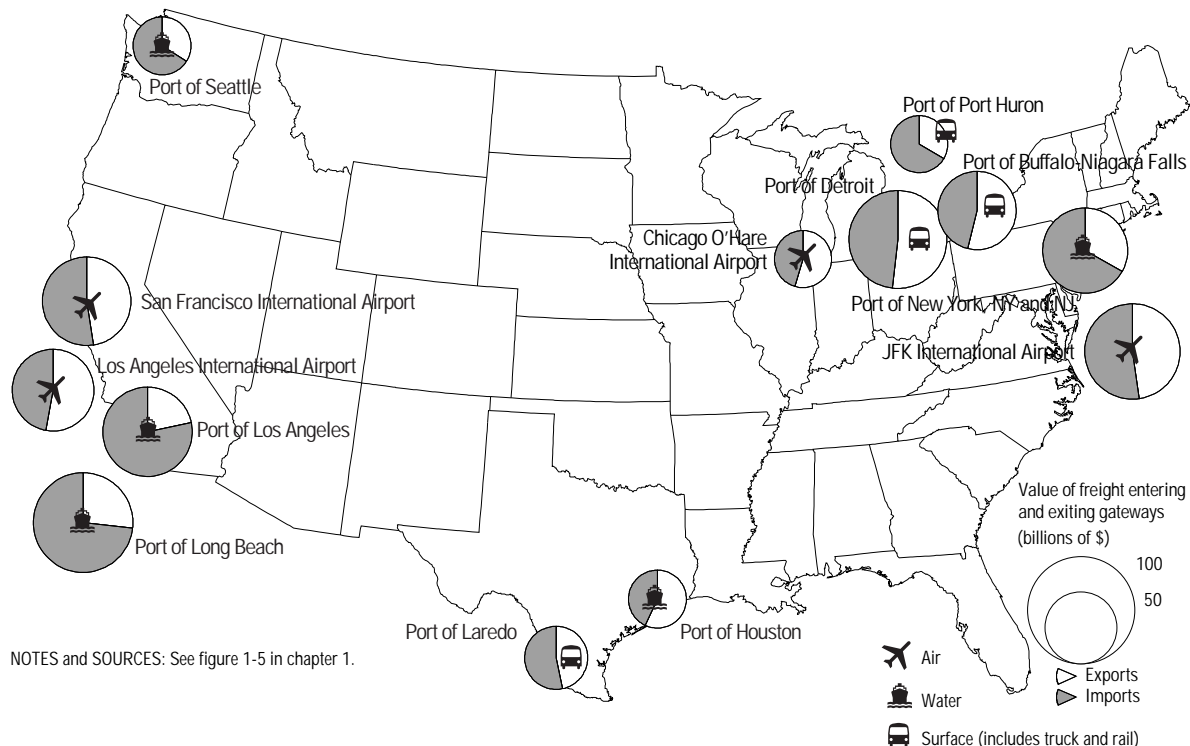
1: flooding in the Upper Midwest, strikes affecting the United Parcel Service and the Bay Area Rapid Transit District, and freight rail service problems in the West. All of these events disrupted transportation services, and prompted users to seek alternative ways of meeting their transportation needs.

Transportation and the Economy

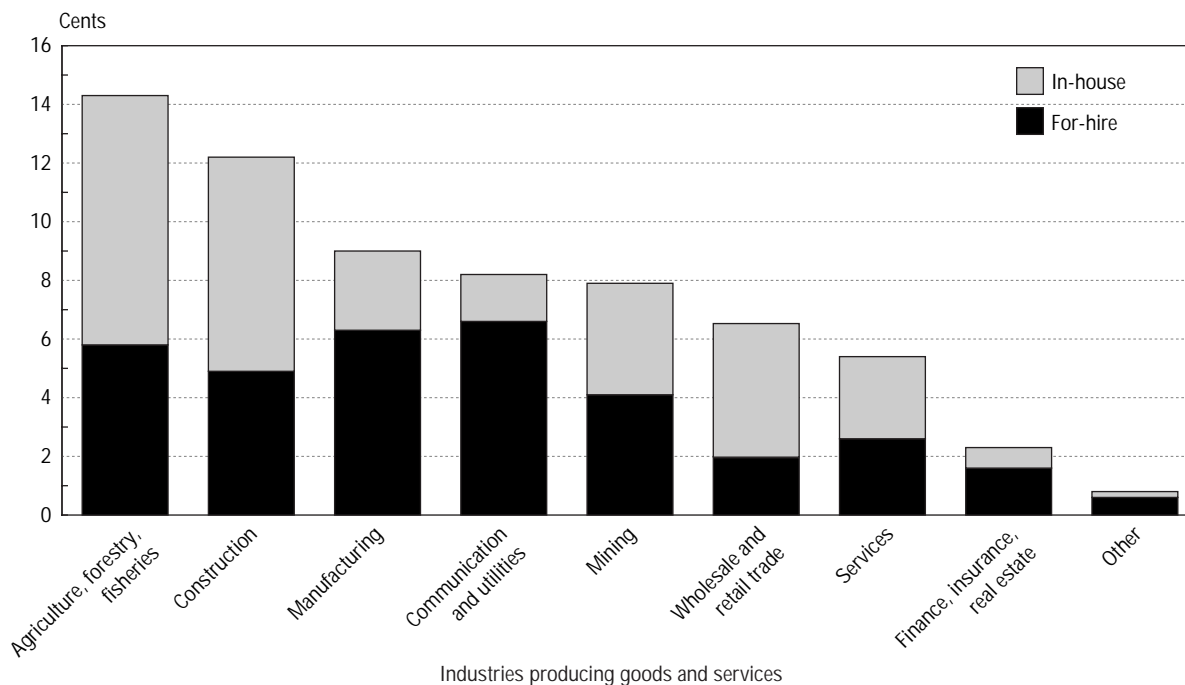
Transportation plays a vital role in the American economy, providing jobs and income, and supporting economic activity throughout the country. It also generates revenues for all levels of government, which, in turn, spend or invest public funds on transportation, mainly for infrastructure.

In 1996, the United States produced \$847 billion of transportation-related goods (e.g., cars

Top Foreign Trade Gateways by Shipment Value: 1996
(Ports with exports/imports exceeding \$30 billion, in current \$)



Cost of Transportation Services in a Dollar of Purchases
by Consumers and Other End-Users: 1992



SOURCE: See figure 2-3 in chapter 2.

and gasoline) and services (e.g., trucking and auto insurance), some of which were exported. This amount, called “transportation-related final demand,” represented about 11 percent of the Gross Domestic Product (GDP).

This demand measure is one of the broadest indicators of transportation’s role in the economy. Since 1991, transportation has ranked fourth among the six major societal functions in the magnitude of final demand, behind housing, health care, and food, and ahead of education.

A narrower measure is the value-added by transportation services, both for-hire and in-house. This supply measure is comprised only of services that move people and goods on the transportation system. Until now, national measures of transportation services only counted the value of for-hire transportation services, ignoring the sizable contribution of in-house transporta-

tion by nontransportation firms. For example, many retail companies use their own truck fleets to move goods from their warehouses to their retail outlets. A new accounting tool, called the Transportation Satellite Accounts (TSA), now provides a way to measure both for-hire and in-house transportation services. The TSA was developed jointly by BTS and the Bureau of Economic Analysis of the Department of Commerce.

Together, in-house and for-hire transportation services contributed about \$313 billion, or 5 percent of the value generated by the U.S. economy in 1992. This is roughly comparable to the value-added by the wholesale/retail trade or health industries. Trucking alone accounts for 65 percent of the total value-added of transportation services.

The inclusion of in-house transportation reveals that transportation’s impact on the pro-

duction of goods and services is greater than previously documented. For example, 14¢ of every dollar of agricultural output is attributable to transportation—more than twice the previous estimates based on for-hire services only. This shows that the costs of goods and services are more sensitive to transportation costs.

Transportation's economic importance is felt strongly by consumers. In 1995, the average American household spent about \$6,000 on transportation—nearly one-fifth of household spending. Historically, households in the West have spent more on transportation than those in other parts of the country, and data suggest that transportation expenditures by rural and urban households have fluctuated over time. Since 1984, however, expenditures in the Midwest and South have increased faster than in the West and Northeast. In 1995, urban household expenditures for transportation went up, while rural expenditures went down. Across the nation, when Americans traveled out of town, well over one-third of their travel expenditures were for transportation.

Government spending on transportation grew steadily between fiscal year (FY) 1984 and FY 1994. In FY 1994, federal, state, and local governments spent a total of \$124.5 billion, or 1.8 percent of GDP, on the nation's transportation system. In contrast, transportation revenues for all levels of government for FY 1994 were \$86 billion. Between FY 1984 and FY 1994, however, government transportation revenues grew by 6.2 percent annually on average.

Highways continued to get the dominant share of funds from 1984 to 1994, but spending on transit increased at a higher rate than other modes. Highways generated the most government transportation revenues in FY 1994 (about 71 percent of the total). In the same year, a very large portion (93 percent) of federal revenues

was given to states and localities as grants, of which more than three-quarters went to highways and 15.8 percent to transit.

A large portion of government transportation expenditures is concentrated on investment, particularly for infrastructure. From FY 1984 to FY 1994, government investment in transportation doubled, and investment in infrastructure grew 7.4 percent a year. In FY 1994, about 84 percent of investment funds were spent on infrastructure, and the remainder on equipment. Investment in air transportation grew the fastest, tripling in amount during the 1984 to 1994 period. Government investment in transit infrastructure also increased significantly during the 10-year period to 9.1 percent annually.

Employment and labor productivity are also indicators of transportation's importance to the economy. Between 1986 and 1996, the number of persons employed in for-hire transportation industries grew by 2.8 percent annually, compared with the 1.6 percent annual growth rate for total U.S. employment.

Transportation Safety

Transportation crashes and accidents claimed the lives of 44,505 people in 1996 in the United States, slightly under half of all accidental deaths. Almost 95 percent of all transportation fatalities involved motor vehicles. Although estimates are approximate, roughly 3.5 million people were injured in highway crashes in 1996.

Of the 2,600 transportation fatalities in 1996 that were not highway vehicle-related, more than half (1,340) involved recreational boating and general aviation (e.g., private planes for individual and business use). Combined, commercial passenger carriers (airlines, trains, waterborne vessels, and buses) accounted for about 1,200 fatalities. This count includes more than 500 bystanders and others outside vehicles.

Despite the high toll, most transportation modes are safer today than they were three decades ago. Highway fatalities have declined from their high point in 1972, and the 1996 fatality rate (1.7 fatalities per hundred million vehicle-miles) is about one-third the level reported in the late 1960s. Commercial airline travel is also much safer, with fatalities per hundred thousand trips far below their 1970 level.

As total travel continues to increase, indicators of improved safety have leveled off. The number of highway fatalities has risen from its recent low in 1992, and fatality rates show little or no improvement. Similarly, commercial aviation rates (when adjusted for year-to-year fluctuation) have been flat for even longer.

As discussed in chapter 3, transportation crashes may have multiple causes, making it difficult to isolate a single factor. Human factors are implicated in a high proportion of crashes or accidents in many modes, but often in combination with another factor. For example, between 1985 and 1994, human factors were present in 90 percent of crashes, and equipment failures accounted for 38 percent of crashes of all major air carriers.

Clearly, many fatalities and injuries arising from motor vehicle crashes could have been prevented. In 1996, more than 17,000 people died in alcohol-related motor vehicle crashes (i.e., a driver in either vehicle or a fatally injured nonoccupant had some alcohol in their blood). About 36 percent of pedestrians aged 14 or older and 30 percent of drivers killed in motor vehicle crashes were intoxicated (with a blood alcohol count of 0.10 or more). Exceeding the speed limit or driving too fast for conditions was a factor in 30 percent of fatal crashes. Only about two-thirds of Americans use safety belts, despite evidence that safety belt use saves lives and reduces injury severity in crashes.

Safety issues and demography interact in complex ways. Last year's safety chapter focused on children using the U.S. transportation system. This year, the chapter features safety and older Americans, especially those over 70 years of age. As the population ages, it is probable that there will be more older drivers than ever before. Older Americans continue to have a great need for mobility even after they leave the labor force. With the dispersion of housing, shopping, and services that has accompanied suburbanization, traditional transit options are often not practical for many older Americans, most of whom continue to live in places where they brought up their children. Hence, they must provide for their own mobility, unless new, more flexible alternatives become available.

Energy and the Environment

► Energy

Transportation energy consumption is determined by two factors: activity level and energy efficiency. For example, highway vehicle-miles increased 3.2 percent annually between 1970 and 1996. Vehicle fuel economy gains, however, have leveled off. Although new passenger car fuel economy increased dramatically after the 1973-74 oil price shock, only slight new car economy gains were realized after 1982, and no significant gains have been realized since about 1987.

Rail and aircraft efficiency have improved steadily over the past few decades, but these advances have had little overall effect because of highway vehicles' (especially light-duty passenger vehicles) dominating share of energy use. Light-duty passenger vehicles consumed more than 60 percent of all transportation-related energy in 1996.

Minimal gains in highway vehicle efficiency prevail in spite of rapid development of vehicle and engine technologies over the past decade.

Fuel-injected engines, lockup torque in transmissions, four-valve engines, and other technologies have been used to produce vehicles that are heavier and more powerful without lowering efficiency. Increased light-duty truck purchases have tended to offset efficiency gains, because these vehicles are considerably less efficient than passenger cars.

Increases in U.S. energy demand and declines in U.S. oil production have led to continued dependence on oil from foreign countries. In 1997, the United States imported 8.95 million barrels per day of crude oil and petroleum products, slightly more than the previous record high reported in 1977. About 53 percent of U.S. demand is supplied by relatively secure Western Hemisphere countries. The Organization of Petroleum Exporting Countries (OPEC)—the group of oil producing countries that cooperated in the 1970s to force up world oil prices—controls about 42 percent of the world's oil supply.

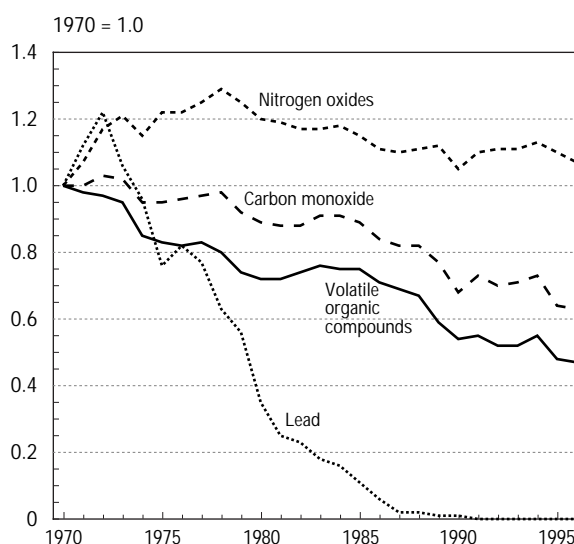
The less dependent the United States is on petroleum, the smaller the impact rapid price increases would have on the economy. Transportation's oil demand, which accounts for approximately two-thirds of total U.S. petroleum consumption, is less price elastic than other economic sectors. While other sectors of the economy have reduced oil use, transportation currently consumes more petroleum today than in 1973. In fact, more than 95 percent of transportation's energy comes from petroleum. Thus, the nation's dependence on imported petroleum is more than ever a result of transportation's reliance on oil. The small fraction of energy from other sources is growing, primarily from efforts to reduce air pollutant emissions—yet it appears that transportation will remain petroleum dependent for some time to come.

► Environment

Transportation activity, energy use, and infrastructure produce negative impacts on the environment. Air pollution is the most evident impact, although transportation also results in water and noise pollution, solid wastes, and damage to wildlife habitat and ecosystems. In addition, transportation produces greenhouse gas emissions, which have the potential to contribute to global climate change.

Largely due to engine emissions control technologies, efforts to reduce several key air pollutants from transportation have been quite successful. Overall estimated emissions decreased (substantially in some cases) between 1970 and the present, despite an approximate doubling of transportation activity. Transportation-related lead emissions have been virtually eliminated. The reduction in transportation air pollution has contributed to the steady improvement in the nation's air quality over the past two and a half decades.

Selected Transportation Air Emissions Index:
1970–96



SOURCE: See figure 4-8 in chapter 4.

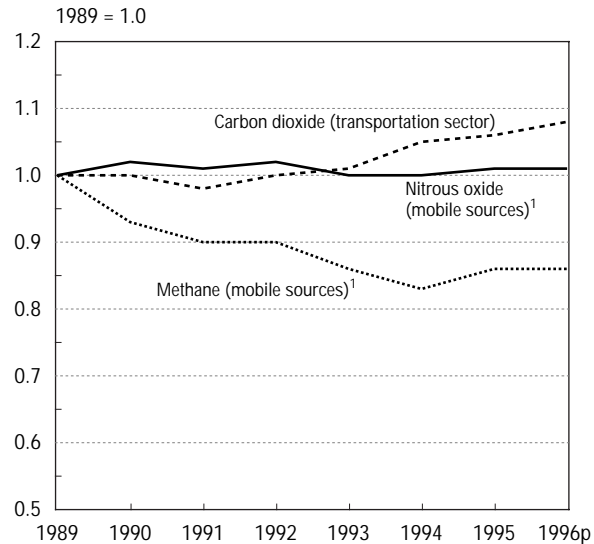
In 1997, the Environmental Protection Agency (EPA) tightened national ambient air quality standards for particulate matter and ground-level ozone, citing recent research on the negative health effects of very fine particulate matter (PM) and ozone at lower exposure levels than previously realized. Currently, it is unclear to what extent these new PM and ozone regulations will affect transportation-related sources.

Over the last two decades, a major effort has been made to reduce the exposure of people in neighborhoods that surround commercial airports to aircraft noise. Exposure to day-night airport noise levels of 65 decibels or greater decreased from 7 million persons in 1975 to 1.7 million in 1995, despite a 75 percent increase in commercial aircraft departures during the same period. These reductions are due to increasingly stringent aircraft noise certification standards.

The use of ethylene and propylene glycols to deice and anti-ice runways and aircraft have prompted environmental concerns in recent years. At least half or more of the glycols sprayed on aircraft fall to the ground where they may enter stormwater drains, seep into the ground, or mix with snow moved off the pavement. These highly soluble chemicals increase the biological oxygen demand of receiving waters and threaten oxygen-dependent aquatic life, and ethylene glycol is toxic to mammals at relatively low concentrations.

Recycling continues to be an important way to reduce solid waste generation from transportation vehicles, parts, and infrastructure. New applications and technologies for recycling scrap tires have significantly decreased the number of these tires that are added to stockpiles or landfills or dumped illegally. About 250 million tires are scrapped annually in this country. Other parts of highway vehicles are also routinely recycled or refurbished and reused. Highway pavement,

Transportation-Related Greenhouse Gas Emissions Index: 1989–96



¹ Mobile sources include emissions from farm and construction equipment, in addition to transportation sources.

KEY: p = preliminary.

SOURCE: See figure 4-7 in chapter 4.

guardrails, and signs are also being recycled in varying amounts by states, and most of the rail infrastructure is recycled or reused. Although the amount of aircraft recycling is unknown, scrappage rates are much lower than that of automobiles.

Mounting concern exists about anthropogenic releases of greenhouse gases (GHGs), primarily in the form of carbon dioxide (CO₂), from the combustion of fossil fuels and their potential to contribute to global climate change. The transportation sector accounted for about one-third of total CO₂ emissions from anthropogenic sources in the United States since 1990.

In 1997, representatives of 159 countries meeting in Kyoto, Japan, reached an international agreement on reducing GHGs. Many issues remain unsettled and the U.S. Congress must ratify the agreement before it becomes binding. There are many ways to reduce GHG emissions,

some of which (such as improving vehicle efficiency or use of alternative fuels that contain less carbon) involve transportation.

Finally, transportation and land use interact in complex ways. Transportation improvements often lead to urban sprawl, which also can increase the demand for transportation relative to more compact development patterns. The interactions between transportation and land use are poorly understood and difficult to quantify.

The State of Transportation Statistics

Data-collection efforts since 1991 have filled many of the key transportation information gaps decisionmakers faced when BTS was created, but critical challenges remain. Moreover, the speed of technological, economic, and social change has increased the pressure for more timely and more geographic and demographic-specific data. Also, concerns about public sector accountability, most notably through the Government Performance and Results Act of 1993,¹ have created demands for information on the performance of the transportation system and how transportation performance is affected by government programs.

The complete picture of the transportation system and its consequences requires accurate and comprehensive information on freight activity, passenger travel, and vehicles; transportation facilities and services; and pertinent economic, safety, energy, and environmental data. The information gaps for each of these topics are summarized in chapter 5, and treated more fully in the BTS report, *Transportation Statistics Beyond ISTEA: Critical Gaps and Strategic Responses*.

With the enactment of the Transportation Equity Act for the 21st Century (TEA-21)² in June 1998, Congress added several new topics

and functions for BTS to pursue in the coming years. The concluding section of chapter 5 briefly highlights the Bureau's new mandates under TEA-21.

PART II: LONG-DISTANCE TRAVEL AND FREIGHT MOVEMENT

Few conveniences of modern life are so taken for granted as transportation. Even in small towns, Americans can buy fresh fruits and vegetables in midwinter; send packages across the country for overnight delivery, or fly from coast to coast to celebrate a holiday with relatives and return home the next day. U.S. businesses are able to draw on supply and distribution networks that are global in scope. Among working couples, it is not uncommon for a spouse to take a new job hundreds or even thousands of miles from home, frequently returning home for a long weekend until the other spouse finds employment at their new location. These developments, unheard of a century ago, are now so ordinary that they come to public attention mostly when an unexpected disruption—a dramatic snowstorm or a breakdown in the system—delays accustomed movements from one place to another, prompting television crews to interview travelers stranded at airports or film traffic halted on a road.

The great mobility and access to goods that Americans enjoy would not be possible without the advanced transportation network that has developed in the United States. This national system links all regions, connecting small and large cities, and urban and rural areas. The importance of this national network is highlighted by the statistics on long-distance travel and nonlocal freight shipments discussed in detail in Part II.

¹ Public Law 103-62, 107 Stat. 286 (1993).

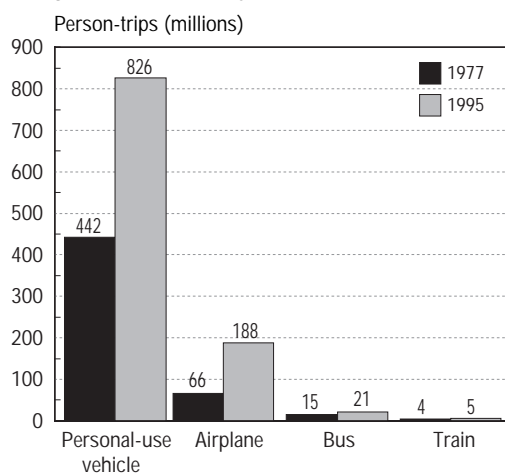
² Public Law 105-178, 112 Stat. 107 (1998)

Long-Distance Travel in the United States

Long-distance travel has grown phenomenally over the past 20 years. The American Travel Survey shows that, in 1995, Americans traveled 827 billion miles domestically on over 1 billion long-distance trips (those more than 100 miles from home). This was nearly twice the number of trips taken in 1977 (the last year for which comparable data are available) and more than twice the 1977 travel-miles. Americans averaged about 4 long-distance roundtrips in 1995, compared with 2.4 trips in 1977, and these trips accounted for more than one-fifth of all passenger-miles traveled. Individuals averaged over 3,100 miles on domestic long-distance trips in 1995, up from 1,700 in 1977.

The increase in long-distance trips has been spurred by such factors as income growth, greater vehicle availability, an increase in the number of married couples without children, and, to a small extent, growth in the number of people in age cohorts that are most likely to travel. Other factors, like increasing regional economic interdependency and lower fares, have also contributed to the growth of long-distance travel.

Long-Distance Trips by Mode: 1977 and 1995



SOURCE: See figure 6-2 in chapter 6.

Long-distance travel is concentrated in several markets. Intraregional travel includes trips under 500 miles one way. Concentrations of such trips include major linear corridors (e.g., Northeast, California, Pacific Northwest), triangles (Florida and Texas), and local hubs (such as around Atlanta). Interregional trips range in length from 500 to 1,500 miles one way. Some of the largest interregional flows are from the Northeast corridor to Florida (particularly to Miami, Orlando, Tampa, and West Palm Beach), Chicago, and Atlanta; from California to the Pacific Northwest; and from Chicago to Texas. There are several transcontinental markets between places that are more than 1,500 miles apart one way. The largest markets are those between New York and California (Los Angeles and San Francisco). The top 10 city pairs are shown in the box below.

Cars, light trucks, and recreational vehicles are the dominant means of transportation for long-distance trips, reflecting their widespread availability and the relatively low operating costs (once a vehicle is purchased and insured). In 1995, they accounted for about 80 percent of person-trips, about the same as in 1977. Air travel, the second most popular means of transportation, grew in market share, accounting for 18 percent of trips in 1995, up from 12 percent in 1977.

Top 10 Long-Distance Travel Flows

Between		Person-trips
Los Angeles	San Diego	10,467,000
Las Vegas	Los Angeles	9,120,000
New York	Philadelphia	8,476,000
New York	Washington, DC	7,773,000
Los Angeles	Los Angeles	7,575,000
Los Angeles	San Francisco	7,050,000
Sacramento	San Francisco	5,338,000
New York	New York	5,202,000
Philadelphia	Washington, DC	4,679,000
Dallas	Houston	3,097,000

Long-distance trips taken for social (i.e., non-business) reasons, outnumber business trips, but the relative importance of business trips has increased. Moreover, a greater proportion of social trips are consumption-oriented (e.g., vacations, attendance at sports events, or shopping). As a result, the economic impact of long-distance travel has increased over the past two decades.

Holiday travel places the most concentrated demand on the passenger transportation system. On the Sunday after Thanksgiving in 1995, for instance, Americans made 13.7 million long-distance trips, compared with the annual daily average of 5.5 million. Nearly all of the Sunday after Thanksgiving trips were made by automobile (about 11.5 million) or air (nearly 2 million).

With the near doubling in number of trips since 1977, travelers are spending far more nights away from home, an important fact for hotels, restaurants, and many other businesses. In 1995, the number of person-nights spent in hotels, motels, bed and breakfast establishments, or resorts was 1.3 billion, 600 million more than in 1977. Still, people are more likely to stay overnight with friends or relatives.

More than half of domestic long-distance trips in 1995 were made to out-of-state destinations. Not surprisingly, states with large populations attracted and generated the most long-distance travel. People living in less populated states make the most long-distance trips per capita. Tripmakers in western states with large land areas travel the most miles. People in highly urbanized, eastern states and in poorer states take comparatively few trips.

Access to transportation—whether geographical, financial, or physical—is not uniform, and as a result mobility outcomes vary by social and demographic group. Higher income people can afford to purchase more transportation, and also may have more opportunities for vacations and other leisure activities involving long-distance

travel. People in households earning more than \$50,000 a year made 6.3 long-distance trips on average in 1995, four times the 1.6 trips made on average by people in households earning less than \$25,000.

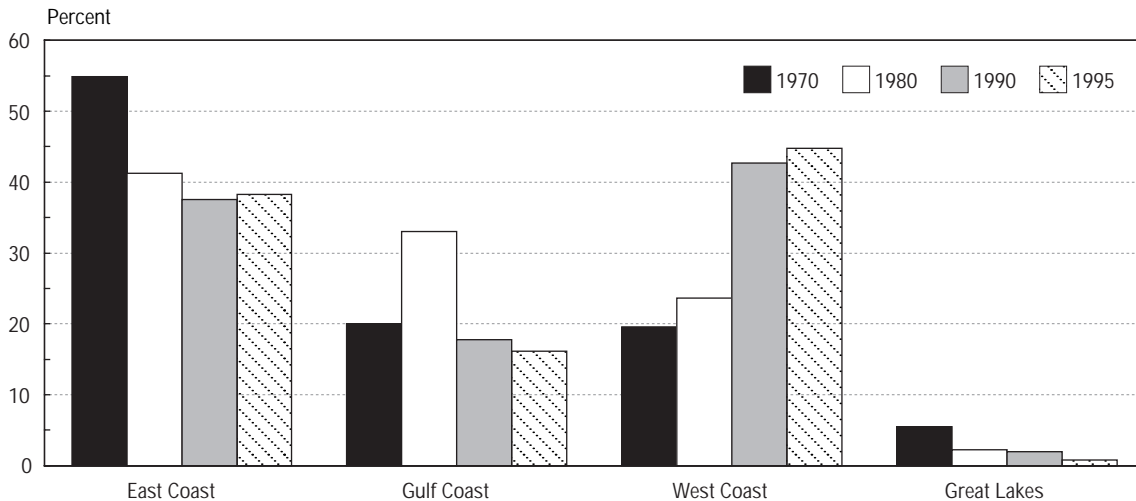
Women traveled less than men in 1995, taking, on average, 3.5 domestic trips covering 2,900 miles compared with men's 4.5 trips covering 3,700 miles. The disparity between the sexes is virtually unchanged since 1977, because long-distance travel has grown at the same rate for both groups. Women, therefore, continue to account for about 45 percent of all long-distance trips and person-miles.

In 1995, whites made more than twice the number of long-distance trips as blacks (4.4 person-trips per capita versus 1.9) and twice as many as Hispanics (2.2 trips per capita). The disparity appears to have declined as tripmaking by some minority groups increased faster than that by whites between 1977 and 1995.

Among age groups, people aged 45 to 54 showed the highest propensity to travel, taking 6 trips per capita, followed by those 55 to 64, and 35 to 44. The youngest (under 18) and oldest (75+) members of the population traveled the least. All age cohorts traveled more in 1995 than in 1977, but the travel behavior of different age cohorts has changed quite dramatically over this period.

Future trends in long-distance travel will depend on many factors, including demographic change, income growth, and economic change. A key question is how much and by what means the growing elderly population will travel, particularly after 2010 when the first baby boomers reach 65. Travel by medium- and low-income households can be expected to grow if their income grows or if the price of transportation falls relative to income. Women's long-distance travel could grow relative to men, depending on such factors as earnings, family

Regional Shares of Oceanborne International Trade by Shipment Value: 1970–95



SOURCE: See table 7-6 in chapter 7.

size, business travel, and the number of single-parent families headed by women.

Long-Distance Freight Transportation

Freight shipments of more than 100 miles account for over 91 percent of the ton-miles moved in the United States. U.S. domestic establishments covered in the Commodity Flow Survey (CFS) shipped materials and goods weighing over 12 billion tons and generated over 3.6 trillion ton-miles on the nation's freight transportation system in 1993. Because of the robust U.S. economy, these shipments are likely to have grown in the intervening years.³

Ton-miles have risen greatly since 1970, because of increased tonnage moved over longer distances, growth in the domestic economy, changes in supply-chain and production systems, and increases in international trade. International trade has affected transportation activity within the United States in many ways, such as

geographic shifts in the direction of some domestic freight flows.

U.S. businesses appear to be shipping more freight over longer distances. Factors affecting this increase include, among others, geographic dispersion of production activities, more use of centralized warehouses and distribution centers to improve supply-chain efficiency, reliance on imported parts for high-value manufactured products, and adoption of global marketing strategies by many companies. It is not unusual today for dozens of companies at far-flung locations to be involved in the production, assembly, marketing, and sales of products. Often, each step in the process requires transportation over appreciable distances, thus generating a large number of ton-miles.

Reliable freight transportation enables connections between businesses and suppliers and markets throughout the United States, and facilitates regional specialization. For example, lumber and wood production is highly concentrated in the Pacific Northwest and southeastern states, while transportation equipment is concentrated in East North Central and Pacific states. Inexpensive

³ The Commodity Flow Survey was repeated in 1997. Information from this latest survey is scheduled to become available beginning in the Fall of 1998 and will be presented in *Transportation Statistics Annual Report 1999*.

freight transportation also can help regions attract new business, such as motor vehicle assembly plants in southeastern states.

Growth in international trade directly impacts domestic freight activity and places demands on the nation's transportation system for access to ports and connections to the interior. A few countries maintain a large share of total U.S. trade, and thus have a larger impact on domestic

freight activity. In 1997, Canada and Mexico accounted for nearly one-third of U.S. goods trade. Since the signing of the North American Free Trade Agreement in 1994, land freight movements between the United States and Canada and Mexico have increased. In 1996, over \$410 billion worth of goods moved by land between the three countries, an increase of 21 percent since 1994.